REMARKS

Reconsideration is respectfully requested.

Objection to the Specification

Appendices

By this amendment, Appendices A and B have been cancelled. Therefore, the Examiner's objections thereto are moot.

Page 27

By this amendment, Applicant has cancelled page 27 and resubmitted the language therein with appropriate spacing. While the resubmitted language does differ from the original language, it is respectfully submitted that these differences are merely to correct minor typographical errors and are supported by the specification as originally filed. That is, no new matter has been added.

For the Examiner's convenience, a marked-up copy of page 27 is provided which shows the differences between page 27 as originally filed and the language of page 27 as amended. This marked-up copy is provided as Exhibit A.

Abstract

In accordance with the Examiner's requirement, the Application has been amended to include an Abstract. The Abstract is provided above, on a separate sheet.

Applicant's Invention

Claims 1-3 have been amended. Claims 5 and 6 have been cancelled. Claims 7-19 have been added.

Applicant's invention as set forth in the presently-pending claims is directed to an apparatus that matches the communication protocol, and capabilities within the protocol, of a first station of a point-to-point data communication network to the communication protocol of a second

B

communication station. As discussed in Applicant's specification (page 2, lines 13 et seq.),

> The necessity for providing in a station means for automatically detecting the communication capabilities of other stations in a network has been recognized. A method and apparatus for performing such automatic detection is the subject of copending patent application Serial No. 08/146,729, filed and assigned to National Semiconductor Corporation, the assignee of the present application. As described in the copending application, each of two connected stations communicates to the other station, via Fast Link Pulses, its respective communication capabilities. When each station has detected the other stations capabilities, the stations each automatically change to a configuration which provides the highest common denominator of capabilities.

The above-described automatic detection method and apparatus is now commonly known as Auto-Negotiation.

Applicant's invention is an improvement over Auto-Negotiation. That is, with Applicant's invention, there is a true negotiation of protocols (and abilities within the protocols). A significant feature of Applicant's claimed invention is that neither party to the negotiation is predetermined to be a "master" or a "slave" to the negotiation. Rather, the invention includes "priority determining means" for determining which of the first station and the second station is a higher priority station for protocol negotiation and capability negotiation.

With regard to Fig. 23, it is noted that the decision block at label 1, as the application was originally filed, is labelled "MATCH PID FIELD". This is an error, as evidenced by the description, for example, at page 18, lines 1-8. There, it is described how if there is no match of PID's (at label B), it is verified (at label 2) if the local node can support other protocols. However, *if the PID of the local node is not the lowest*, the local node will wait (at label 4) until the timer 1 is complete. Since there must be passage through label 1 in order to get to label 4 from label B, it follows that label 1 is where the local node checks to see if its PID is the lowest. In addition, while not explicitly shown in Fig. 23, it is implicit that protocol advertisement, as recited in the claims as filed, takes place at label A. Thus, it is proposed to further amend Fig. 23 to show this feature.

Objection to Drawings and Rejection under 35 U.S.C. § 112, Second ¶

The drawings are objected to as not showing the "changing means" and "waiting means". Claim 1 is rejected as not clearly reciting what is the "first result" and the "second result". As discussed below, the claims have been extensively amended in response to the office action. It is respectfully submitted that the drawings show every feature of the invention specified in the amended claims and that the claims particularly point out and distinctly recite Applicant's invention.

For the Examiner's convenience, Applicant has included with this amendment, as Exhibit B, a marked-up copy of Fig. 23. In particular, Fig. 23 illustrates an embodiment in accordance with the invention, and Exhibit B shows how the features set forth in the amended and new claims are supported by Fig. 23. It is noted that Fig. 23 is described in the specification beginning at page 20, line 23.

Rejection: Anticipation by McGlynn

Claims 1-3 and 6 stand rejected as being anticipated by McGlynn's modem feature negotiation protocol. It is respectfully submitted that Applicant's invention as set forth in the amended and new claims is patentably distinct over McGlynn.

In particular, as disclosed by McGlynn, the originating modem always initiates negotiations as the "master", transmitting a list of desired features to the answering modem. Then, the answering modem becomes the "master". That is, if the answering modem does not support all of the features desired by the originating modem, the answering modem returns to the originating modem a subset of the features list or sends a different features list. The negotiation follows this back-and-forth path until either agreement is reached or there is a timeout.

By contrast, as discussed above, a significant feature of Applicant's claimed invention is that there is no predetermined "master"/"slave" relationship between the "first station" and the "second station". Rather, the invention includes "priority determining means" for determining which of the first station and the second station is a higher priority station for protocol negotiation and capability negotiation. When protocols (or capabilities

within a protocol) do not match, the higher priority station becomes the "master", able to offer other protocols (or capabilities). The lower priority station becomes the "slave", and must wait for other protocols (or capabilities) to be offered from the other station.

An example of this is given in the specification, where it is discussed that the higher priority station for protocol negotiation is the one with the lower advertised protocol identifier, or PID, (at label 1 of Fig. 27) and the higher priority station for capability negotiation is the one with the lower advertised capability field (at label C of Fig. 27).

Since nothing of this sort is either disclosed or suggested by McGlynn, it is respectfully submitted that Applicant's invention as set forth in the claims is fully patentable over McGlynn.

Rejection: Anticipation by IEEE Draft

Claims 1-6 stand rejected as being anticipated by the Draft Supplement to IEEE Std 802.3 ("IEEE"). It is respectfully submitted that Applicant's invention as set forth in the amended and new claims is patentably distinct over IEEE.

As the Examiner recognizes, IEEE discloses what is now commonly know as Auto-Negotiation. As described by IEEE, Auto-Negotiation involves two devices transmitting an FLB burst to each other. The FLB burst indicates the capabilities of each transmitting device to the other, receiving device. Each receiving device inspects the received FLB burst and compares it to the FLB burst which it transmitted. Then, both devices configure to the "highest common denominator". See, e.g., lines 15-20 of page 12. Thus, in fact, it can be seen that Auto-Negotiation is not really a "negotiation" at all.

This is in sharp contrast to Applicant's invention. That is, as discussed above, Applicant's invention features a true back-and-forth negotiation, with the priority between the two stations being re-established at each step of the negotiation. Since nothing of this sort is either disclosed or suggested by IEEE, it is respectfully submitted that Applicant's invention as set forth in the claims is fully patentable over IEEE.

CONCLUSION

For the aforementioned reasons, it is respectfully submitted that Applicant's claims are fully supported by the specification. In addition, it is respectfully submitted that Applicant's claims clearly distinguish Applicant's invention over the art relied upon by the Examiner. Applicant thus respectfully submits that the application is in condition for allowance, and notice to that effect is earnestly solicited.

Respectfully submitted,

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Solution II:

This is a second method to achieve the same results but the arbitration is not done until all the [Protocol] protocol capabilities and technology abilities are exchanged between the two link partners.

The bits A7-A0 in the link code word in Fig. 6 [has] have different definitions for different PID's or selector values in the link code word (D4-D0). A bit definition for a new PID/selector value of 00000 [will be] is defined and [can be] is used to initiate negotiation across devices with multiple protocols. The bit definition in this case is defined in Fig. 24. The next page bit can be used to transfer vendor ID.

The link partners X and Y using this scheme for [negotiate] negotiation is described below:

Node X sends the link code word with selector/PID set to 00000, ack=0, series end bit=0, and a four bit binary encoded value of the number of protocols supported (to node Y).

If Node Y is not multiprotocol capable, then it will keep sending the link code word with the only PID it supports or can handle. On sensing this, Node X will identify that Node Y is not multiprotocol capable and will advertise with the same PID as [of] node Y, if [Node] X can handle that particular protocol. If there are common technology abilities between Node X [an dY] and Node Y, then a link will be established. If Node X is not capable of the protocol advertised by Node Y, then a link cannot be established.

If Node Y is multiprotocol capable, then it also responds with PID=00000, the number of protocols it can support, and other information about itself through the link code word. As specified in the earlier portion of [the document] this description, the ack bit is set on the reception of 4-6 consecutive and consistent link code words. Both nodes begin to transmit their capabilities starting with the lowest PID value they support until all of the protocol capabilities, along with the technology ability bits, are transmitted. It is possible that one of the nodes with fewer protocol abilities can finish its transmission ahead of its link partner. In such a case, it will begin transmitting PID=00000 with the series end bit set to a "1". The

node that is lagging will soon catch up and will also begin transmitting PID=00000 and series end bit=1. Since both modes have advertised the end of transmission, this signifies the end of the capability exchange between the two nodes. (If all the protocol information received [mathces] matches the binary encoded number of protocols identified in the first code word transmission, then there is no loss of information[, else] . Otherwise, the transmission will [be done from the beginning] begin again.) From the beginning to the end of this negotiation with PID=00000, NWay will not configure to the highest common denominator in any protocol [(] . That is, it will be in a partial freeze state [)].

Now that all of the protocol abilities are known, the media access units (MAU's) in both the nodes will look up a common prioritization table to identify the highest common denominator common to both nodes.

The prioritization [Prioritization] table gives the order in which a node prefers to configure based on the protocols and the abilities within that protocol. For example: [Example:]

1) Protocol A, ability 1
2) Protocol B, ability 5
3) Protocol A, ability 2
4) Protocol B, ability 2

[It is obvious that the] The abilities [with in] within a protocol can be mixed in the prioritization table with the abilities from other protocols. This gives tremendous flexibility beyond simply prioritizing the protocols. This also allows network management to mask out certain abilities such that the chosen ability is the most optimal for the kind of service (like data transmission, reliable and isochronous for video/multimedia or lowest cost service etc.) required.--

Correspondence of Claims to Specification (Exhibit B)

FIG. 23